

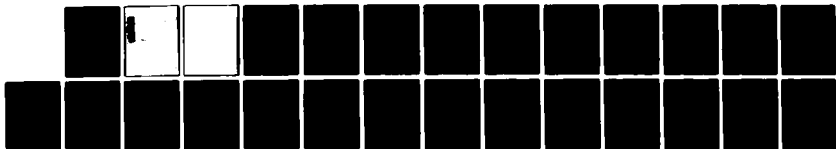
AD-A127 352 193188 MLRS MISSILE NUMBERS DK-106 DK-105 ROUND NUMBERS 1/1

V-417/PW-08 V-418..(U) ARMY ELECTRONICS RESEARCH AND  
DEVELOPMENT COMMAND WSMR NM ATM.. D C KELLER FEB 83

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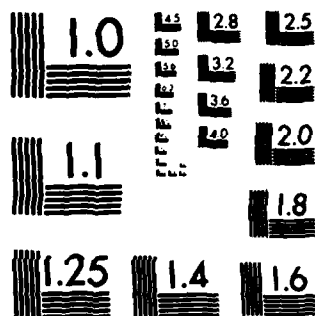
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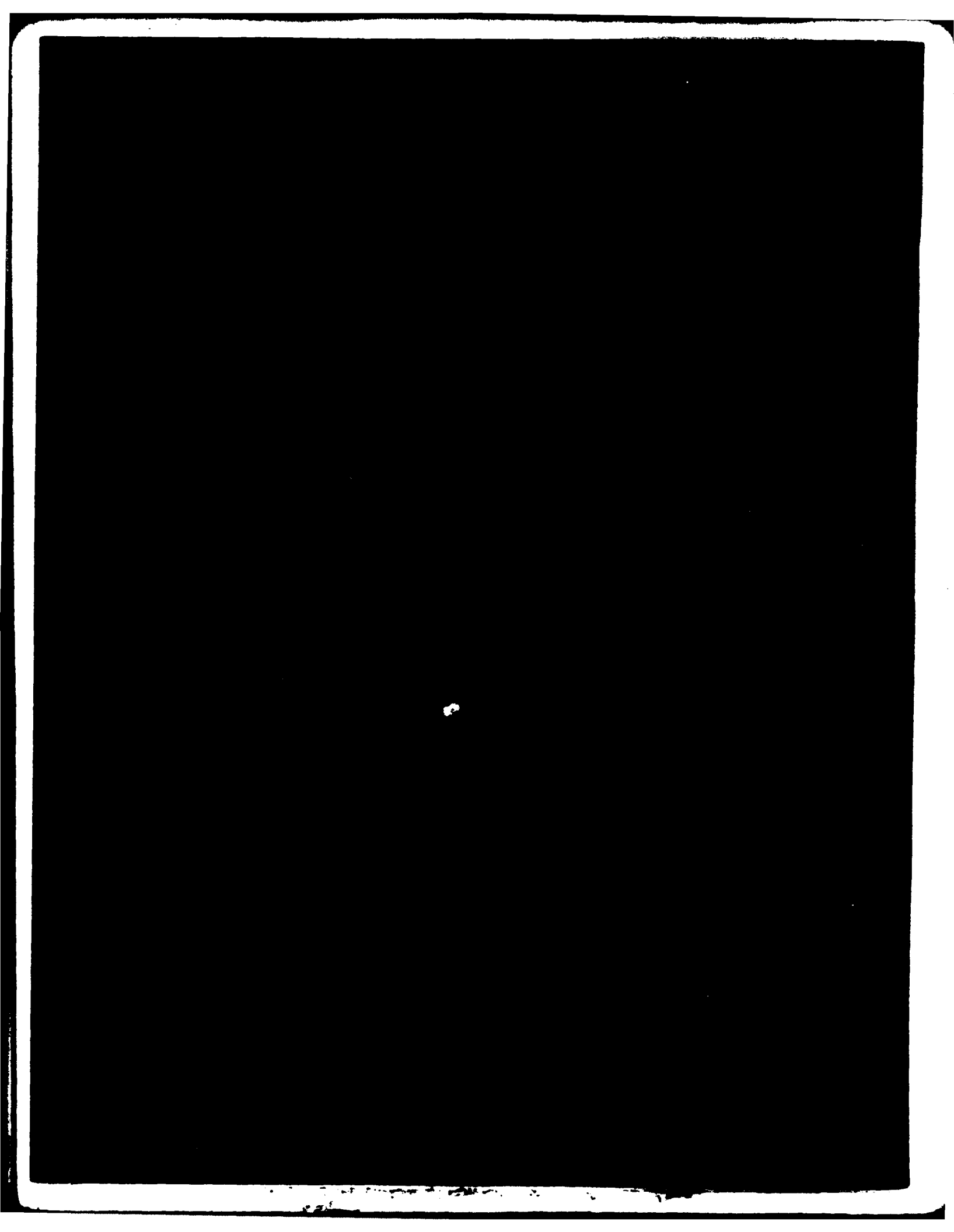
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NATIONAL BUREAU OF STANDARDS-1963-A

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Meteorological data gathered for the launching of the 193108 MLRS, Missile Number DK-106, DK-105, Round Number V-417/PII-08, V-418/PII-09 are presented in tabular form.		

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## INTRODUCTION

193188 MILRS, Missile Numbers DK-106, and DK-105, Round Numbers V-417/PW-08 and V-418/PW-09, were launched from LC-33, White Sands Missile Range (WSMR), New Mexico,, at 0839:26 and 0839:31 MST, 14 Feb 1983. The scheduled launch times were 0835:00 and 0835:04.5 MST.

## DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

### 1. Observations

#### a. Surface

(1) Standard surface observations to include pressure, temperature ( $^{\circ}\text{C}$ ), relative humidity, dew point ( $^{\circ}\text{C}$ ), density ( $\text{gm}/\text{m}^3$ ), wind direction and speed, and cloud cover were made at the LC-33 Net Site at T-0 Minutes.

(2) Anemometer data were provided from existing pole-mounted and tower-mounted anemometers at LC-33. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

#### b. Upper Air

(1) Low level wind data were obtained from Pilot-balloon observations at:

#### SITE AND ALTITUDE

LC-33	2 km
DOI	2 km

(2) Air structure data (rawinsonde) were collected at the following Net Site:

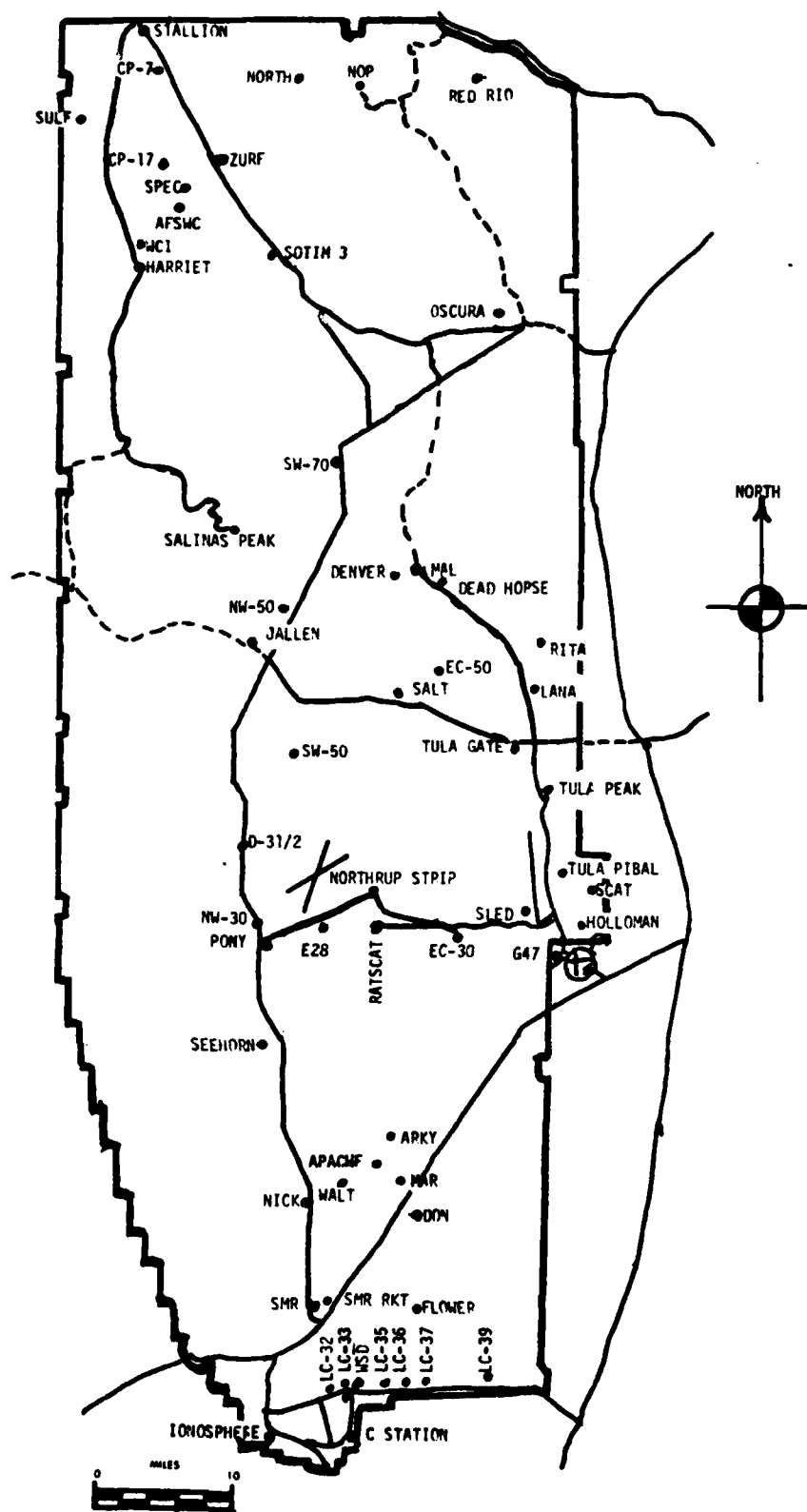
#### SITE AND TIME

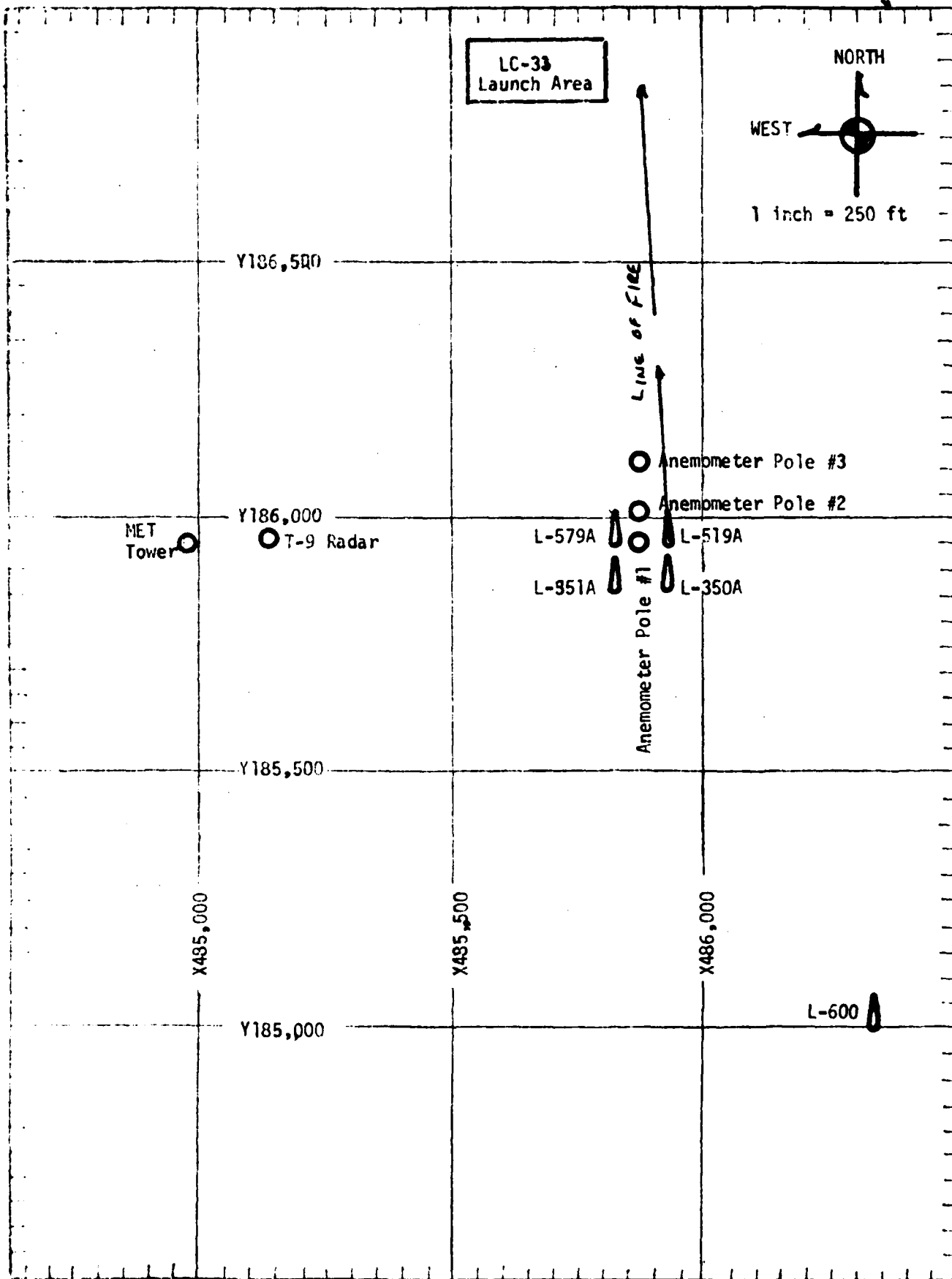
WSD	0650 MST
LC-37	0730 MST
WSD	0830 MST

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# WSMR METEOROLOGICAL SITES





# PROJECT SURFACE OBSERVATION

TABLE 1									
STATION: LC-33 F&A									
DATE: 16 MAY 83									
TIME: 0830									
TIME	TEMPERATURE OF	PRESSURE	DEW POINT	RELATIVE HUMIDITY	DENSITY	DIRECTION	SPEED	CHARACTER	VISIBILITY
M	°C	mb	°C	%	gm/m <sup>3</sup>	degs	kts	kts	
0830	5.1	974.0	1.0	75	1093	111	05		50

OBSTRUCTIONS TO VISIBILITY	CLOUDS						REMARKS			
	1st LAYER		2nd LAYER		3rd LAYER					
	AMT	TYPE	AMT	TYPE	AMT	TYPE				
	1	CU	4000	A	SC	4500	A	AC	10000	VIRGA MW

## PSYCHROMETRIC COMPUTATION

TIME: MST	0830	
DRY BULB TEMP.	5.1	
WET BULB TEMP.	3.2	
WET BULB DEPR.	1.9	
DEW POINT	1.0	
RELATIVE HUMID.	75	

TABLE 2 LC-33 FIXED POLE ANEMOMETER MEASURED WINDS

POLE #1 X485,874.29 Y185,958.90 H4018.74 38.7 ft. AGL			POLE #2 X485,874.29 Y186,012.00 H4033.57 53.0 ft. AGL			POLE #3 X485,877.29 Y186,116.06 H4063.92 83.6 ft. AGL		
T-TIME SEC	DIR DEG	SPEED KNOTS	T-TIME SEC	DIR DEG	SPEED KNOTS	T-TIME SEC	DIR DEG	SPEED KNOTS
-30	276	05	-30	285	03	-30	299	05
-20	288	05	-20	285	04	-20	314	08
-10	282	05	-10	285	03	-10	320	10
0.0	268	04	0.0	299	04	0.0	312	10
+10	305	06	+10	305	05	+10	313	09

TABLE 3 LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

LEVEL #1, 12 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #2, 62 FEET X484,982.64, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KNOTS	T-TIME SEC	DIR DEG	SPEED KNOTS
-30	298	06	-30	288	06
-20	313	05	-20	295	06
-10	307	05	-10	297	07
0.0	311	05	0.0	300	05
+10	310	04	+10	296	06

LEVEL #3, 102 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #4, 202 FEET X484,982.64, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KNOTS	T-TIME SEC	DIR DEG	SPEED KNOTS
-30	303	07	-30	305	10
-20	306	09	-20	310	08
-10	313	08	-10	310	08
0.0	315	07	0.0	298	08
+10	312	08	+10	301	09

## T-TIME PILOT-BALLOON MEASURED WIND DATA

DATE 14 February 1983

SITE: LC-33  
 TIME: 0839 MST  
 WSTM COORDINATES:  
 X= 494,837.34  
 Y= 124,124.44  
 H= 3,975.57

SITE: 000  
 TIME: 0839 MST  
 WSTM COORDINATES:  
 X= 511,938.37  
 Y= 247,396.36  
 H= 3,996.83

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE	311	04
150	311	04
210	320	05
270	329	05
330	336	05
390	341	05
500	347	06
650	343	09
800	339	12
950	335	14
1150	330	13
1350	327	26
1550	325	30
1750	323	31
2000	320	32

Data obtained from a double Theodolite  
 tracked pilot-balloon observation.

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE	000	02
150	026	08
210	020	10
270	014	12
330	000	13
390	360	14
500	341	14
650	322	15
800	313	20
950	310	26
1150	313	31
1350	305	33
1550	292	29
1750	297	24
2000	302	21

Data obtained from a single Theodolite  
 tracked pilot-balloon observation.

AIMING AND T-TIME COMPUTER NET MESSAGES  
14 February 1983

USD 0650 MST  
NETC011324064  
141300122072  
00010004 27720073  
01503005 27760063  
02544023 27690037  
03524020 27370096  
04517030 27070048  
05512044 26700072  
06420043 26310050  
07406045 25900027  
08301040 25600577  
09500032 25100540

LC-37  
NETC011324063  
141450124072  
00000000 27730072  
01500013 27900061  
02505017 27740035  
03561010 27420095  
04523030 27050047  
05511040 26600091  
06406045 26300057  
07507043 26010016  
08504030 25600577  
09400041 26200539

USD 0830 MST  
NETC011324064  
141550122074  
00400003 28050074  
01507005 27960063  
02622008 27710037  
03632017 27330097  
04506020 26900048  
05546027 26460092  
06527029 26000050  
07525020 25700060  
08510030 25330070  
09406035 25000050

CLIMATIC ALTITUDE 3000.0 FEET  
19 FEB. 63 0600 HRS. MST  
ASCENDING: PRO. 76

STATION ELEVATION LEVEL DATA  
0450020076  
WHITE SANDS  
NEW MEX.

GEODETIC COORDINATES  
32.40093 LAT DEG  
106.37033 LONG DEG

PRESSURE MILLIBARS, HEC. FEET	GEODETIC ALTITUDE	TEMPERATURE		RELATIVE HUMIDITY
		AIR DEGREES, CENTIGRADE	DEWPOINT DEGREES, CENTIGRADE	
873.4	3089.0	3.0	1.2	88.0
861.2	4764.2	3.8	-1.5	65.0
850.0	4713.8	3.0	-0	70.0
840.5	5020.1	3.4	-0.6	75.0
800.4	6309.6	0	-2.7	82.0
771.0	7292.5	-1.4	-0.8	57.0
751.0	7965.0	-2.8	-9.9	54.0
731.6	8654.8	-3.4	-10.0	37.0
700.0	9800.0	-6.6	-19.1	36.0
656.0	11954.8	-10.5	-26.9	24.0
620.5	12533.5	-12.9	-24.8	36.0
625.0	12673.4	-13.1	-21.5	50.0
613.6	13250.8	-13.5	-20.0	24.0
567.2	15083.2	-18.4	-20.9	39.0
500.0	18133.4	-25.7	-36.5	30.0

GEODETIC COORDINATES  
32.40043 LAT LEG  
106.37033 LONG LEG

UNEPED AIR DATA  
0450020070  
WHITE SANDS  
TABLE-7

STATION ALTITUDE 5000.0 FEET MSL  
IN FEET 63 9650 INCH 51  
ACCELERATION NO. 76

GEODETIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GRAMS/CUBIC METER	SPEED OF SOUND KILOTS	WIND DATA DIRECTION (CLOCKWISE) SPEED KILOTS	INDEX OF REFRACTION.
3089.0	873.4	3.0	30.0	1070.0	648.3	10.0	1.000278
4000.0	873.0	3.0	37.4	1070.1	648.4	0.4	1.000270
4500.0	850.8	3.8	71.1	1075.1	649.1	32.0	1.000218
5000.0	840.4	3.0	75.1	1050.4	640.7	307.0	1.000204
5500.0	825.2	2.1	77.6	1041.7	647.2	300.7	1.000200
6000.0	809.8	0.8	77.2	1027.2	645.0	297.3	1.000255
6500.0	794.6	-0.3	77.2	1012.2	644.3	295.2	1.000249
7000.0	779.6	-1.0	64.4	996.1	643.3	293.8	1.000241
7500.0	764.4	-1.8	57.3	980.6	642.2	292.4	1.000234
8000.0	750.4	-2.8	56.9	965.7	641.0	291.1	1.000230
8500.0	730.1	-3.3	41.8	949.2	640.3	289.9	1.000222
9000.0	722.0	-4.4	36.7	935.0	639.0	288.7	1.000217
9500.0	708.2	-5.8	35.3	921.9	637.3	287.2	1.000213
10000.0	694.5	-7.0	34.5	908.0	635.7	285.6	1.000209
10500.0	681.0	-8.2	30.4	894.6	634.3	284.1	1.000205
11000.0	667.8	-9.3	27.3	881.3	633.0	281.0	1.000201
11500.0	654.6	-10.4	24.5	867.9	631.6	279.0	1.000197
12000.0	642.0	-11.6	20.1	854.7	630.2	276.7	1.000195
12500.0	629.3	-12.8	15.6	841.7	628.7	270.7	1.000192
13000.0	616.4	-13.5	12.7	828.7	628.1	260.0	1.000189
13500.0	604.0	-14.2	10.5	815.0	627.1	277.1	1.000184
14000.0	592.0	-15.5	12.5	800.9	625.5	279.6	1.000182
14500.0	580.7	-16.0	15.5	789.0	623.0	262.3	1.000179
15000.0	569.1	-17.2	18.6	777.3	622.2	265.5	1.000170
15500.0	557.5	-19.4	19.1	765.1	620.7	262.0	1.000173
16000.0	546.1	-20.6	18.1	753.0	619.2	61.9	1.000170
16500.0	534.9	-21.1	17.0	741.2	617.7	61.7	1.000167
17000.0	524.1	-23.0	17.1	729.5	616.3	61.3	1.000165
17500.0	513.5	-24.2	16.6	718.0	614.8	61.4	1.000162
18000.0	502.8	-25.4	16.1	706.7	613.3	61.3	1.000159

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STATION ALTITUDE 5200.00 FEET MSL  
IN FIB. 63  
ACCELERATOR 10. 76

PARAMETER LEVEL  
10450020076  
WHITE GOLDEN  
TANDEM

010011L COORDINATES  
32.40043 LAT DEG  
106.37033 LONG DEG

PRESSURE POTENTIAL		TEMPERATURE		RELATIVE HUMIDITY		WIND DATA	
MILLIBARS	FEET	ATM	DEGREES CELSIUS	DEGREES F	PERCENT	DIRECTION	SPEED
850.0	4710.	3.8	7.0	76.		313.0	0.8
800.0	6310.	7.0	-2.0	82.		295.7	24.5
750.0	8007.	-2.8	-10.3	57.		291.1	37.2
700.0	9701.	-6.6	-19.1	36.		280.3	43.1
650.0	11675.	-10.9	-26.3	27.		270.0	43.5
600.0	13678.	-14.7	-28.1	31.		270.0	39.9
550.0	15816.	-20.2	-30.7	36.		262.2	38.2
500.0	18109.	-25.7	-36.3	36.			

STATION ALTITUDE 4051.37 FEET MSL  
 14 FEB. 43  
 ASCENSION NO. 9

SIGNIFICANT LEVEL DATA  
 04501600009  
 LC-37  
 TABLE-0

GEODETIC COORDINATES  
 32.40175 LAT DEG  
 106.31232 LON DEG

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE		REL. HUM. PERCENT
		AIR DEGREES	DEWPOINT CENTIGRADE	
871.9	4051.4	3.1	2.1	93.0
860.2	4412.3	4.5	.3	74.0
850.0	4731.6	4.4	-1.8	64.0
838.3	5229.9	3.9	-7.2	44.0
813.9	5888.8	2.4	-10.8	37.0
763.5	7571.4	-2.2	-12.5	45.0
743.9	8249.3	-2.8	-17.2	32.0
700.0	9821.9	-6.5	-24.1	23.0
651.7	11646.5	-9.7	-28.4	20.0
608.5	13372.2	-14.1	-22.7	48.0
591.7	14070.0	-14.7	-25.5	39.0
558.5	15097.5	-18.3	-29.6	36.0
542.7	16199.4	-20.2	-28.8	46.0
526.7	16925.9	-22.1	-31.5	42.0
511.5	17631.4	-24.0	-31.6	49.0
500.0	18175.2	-25.9	-31.0	62.0

STATION ALTITUDE 4051.37 FEET MSL  
14 FEB. 43  
ASCENSION NO. 9

UPPER AIR DATA  
0450180009  
LC-37  
TABLE 10

GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LONG DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
4051.4	871.9	3.1	2.1	93.0	1096.1	648.5	00	0	1.000279
4500.0	857.4	4.5	-3	71.3	1073.0	650.0	303.7	4.1	1.000269
5000.0	841.5	4.1	-4.5	51.2	1055.2	649.4	303.7	8.6	1.000257
5500.0	825.9	3.3	-8.6	41.1	1039.3	648.2	303.7	13.1	1.000247
6000.0	810.5	2.1	-10.9	37.5	1024.5	646.7	303.7	17.6	1.000242
6500.0	795.2	.7	-11.3	30.9	1010.3	645.1	303.7	22.1	1.000238
7000.0	780.3	-6	-11.8	42.3	996.2	643.5	303.7	26.7	1.000235
7500.0	765.6	-2.0	-12.4	44.7	982.5	641.9	299.5	31.6	1.000231
8000.0	751.0	-2.6	-15.3	36.8	966.1	641.1	296.1	36.7	1.000225
8500.0	736.7	-3.4	-10.2	30.6	950.7	640.1	293.4	41.7	1.000219
9000.0	722.6	-4.6	-20.4	27.7	936.7	638.7	290.2	43.5	1.000215
9500.0	708.8	-5.7	-22.6	24.8	922.9	637.2	287.3	45.5	1.000211
10000.0	695.1	-6.8	-24.6	22.7	908.6	635.9	284.8	47.2	1.000207
10500.0	681.6	-7.7	-25.7	21.9	894.2	634.9	283.8	47.2	1.000203
11000.0	668.4	-8.6	-26.9	21.1	879.7	633.9	282.7	47.3	1.000200
11500.0	655.5	-9.4	-20.0	20.2	865.6	632.7	281.6	47.4	1.000196
12000.0	642.6	-10.6	-26.4	25.7	852.3	631.4	282.3	46.4	1.000194
12500.0	630.0	-11.9	-24.6	33.8	839.5	629.9	283.0	45.4	1.000192
13000.0	617.6	-13.2	-23.3	42.0	827.0	628.4	283.8	44.4	1.000189
13500.0	605.4	-14.2	-21.2	46.4	814.0	627.1	284.2	43.4	1.000187
14000.0	593.4	-14.6	-25.2	30.9	799.2	626.5	283.2	42.2	1.000182
14500.0	581.5	-15.8	-26.8	38.1	786.8	625.1	283.2	41.0	1.000179
15000.0	569.9	-17.0	-28.2	37.0	774.8	623.6	282.3	39.8	1.000176
15500.0	558.4	-18.3	-20.6	36.0	763.1	622.0	281.2		1.000173
16000.0	547.1	-19.7	-20.0	43.2	751.6	620.4			1.000171
16500.0	536.0	-21.0	-29.9	44.3	740.3	618.7			1.000168
17000.0	525.1	-22.3	-31.5	42.7	729.0	617.1			1.000165
17500.0	514.3	-23.6	-31.6	47.7	717.9	615.5			1.000163
18000.0	503.7	-25.3	-31.1	57.8	707.7	613.4			1.000160

STATION ALTITUDE 4051.37 FEET MSL  
 IN PER. 1.3  
 ASCENSION NO. 9

MANDATORY LEVELS  
 0450180009  
 LC-37  
 TABLE-12

GEODETIC COORDINATES  
 32.40175 LAT DEG  
 106.31232 LON DEG

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM.		WIND DATA	
MILLIBARS	FEET	AIR	DEWPOINT	PERCENT		DIRECTION	SPEED
		DEGREES	CENTIGRADE			DEGREES (TN)	KNOTS
850.0	4728.	4.4	-1.8	64.		303.7	6.1
800.0	6340.	1.2	-11.2	39.		303.7	20.7
750.0	8030.	-2.6	-15.6	36.		295.9	37.0
700.0	9812.	-6.5	-24.1	23.		285.0	46.8
650.0	11700.	-9.9	-28.0	21.		281.9	47.0
600.0	13707.	-14.4	-24.1	43.		283.8	42.9
550.0	15853.	-19.3	-29.1	41.			
500.0	18150.	-25.9	-31.0	62.			

STATION ALTITUDE 3989.00 FEET MSL  
14 FEB. 43  
ASCESSION NO. 77

SIGNIFICANT LEVEL DATA  
0450020077

WHITE SANDS  
TABLE 1

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

PRESSURE	GEOMETRIC ALTITUDE MILLIBARS MSL FEET	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE	REL. HUM. PERCENT
874.0	3989.0	6.3	66.0
864.0	4298.5	5.5	41.0
850.0	4736.1	4.2	42.0
780.8	6679.8	-1.2	56.0
780.0	7006.6	-1.9	57.0
759.4	7703.5	-3.9	65.0
749.6	8040.0	-4.7	61.0
700.0	9795.6	-9.4	97.0
673.4	10776.5	-11.5	99.0
594.5	13876.7	-18.5	97.0
569.8	14913.2	-20.8	79.0
522.5	17005.5	-24.3	73.0
500.0	18055.8	-26.7	70.0
478.3	19102.8	-29.8	69.0
456.9	20171.4	-31.9	82.0
431.6	21486.6	-35.2	69.0
427.1	21727.4	-34.4	42.0
408.0	22790.1	-29.8	16.0
400.0	23253.5	-30.8	16.0
376.0	24692.1	-33.0	16.0
370.6	25027.4	-32.3	16.0
332.8	27502.8	-36.6	16.0
316.2	28667.5	-37.5	16.0
310.6	29074.5	-36.3	16.0
301.3	29769.9	-35.5	16.0
300.0	29869.3	-34.4	16.0
295.4	30225.5	-33.8	16.0
284.8	31068.8	-33.9	16.0
250.0	34042.3	-39.3	16.0
242.0	34773.9	-40.6	16.0
237.2	35224.0	-39.9	16.0
223.8	36527.0	-41.9	16.0
219.4	36707.7	-41.2	16.0
200.0	39034.4	-43.1	16.0
192.9	39840.2	-41.2	16.0
171.0	42525.6	-43.4	16.0
150.0	45199.9	-48.5	16.0
144.9	46150.0	-48.7	16.0
110.7	51837.6	-60.2	16.0
100.7	53769.9	-63.7	16.0

STATION ALTITUDE 3989.00 FEET MSL  
14 FEB. 83 0830 HRS MST  
ASCENSION NO. 77

SIGNIFICANT LEVEL DATA  
0450020077  
WHITE SANDS  
TARIF-12 cont'd

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

PRESSURE GEOMETRIC ALTITUDE MILLIBARS MFL FEET	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE	REL. HUM. PERCENT
100.0	53011.5	-62.6
97.5	54427.9	-61.6
92.7	57753.2	-66.8
78.3	58445.6	-66.2
75.3	59623.7	-68.1
72.1	60484.4	-68.3
70.0	61078.0	-62.7
63.1	63216.4	-57.5
50.0	67080.4	-65.6
44.5	70344.5	-61.5
38.3	73423.2	-60.9
32.5	76833.4	-56.5
30.0	78510.1	-57.3
26.3	81269.2	-56.3
20.0	87069.9	-52.9
14.1	94662.4	-45.5
10.9	100354.4	-45.1

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

UPPER AIR DATA  
0450020077  
WHITE SANDS  
TABLE 1

STATION ALTITUDE 3989.00 FEET MSL  
14 FEB. 83 0830 HRS MST  
ASCENSION NO. 77

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CM <sup>3</sup>	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
3989.0	874.0	6.3	0.4	66.0	1086.6	652.1	270.0	2.9	1.000273
4000.0	873.6	6.3	.2	65.1	1086.3	652.1	271.4	2.9	1.000272
4500.0	857.5	4.9	-7.1	41.5	1072.7	650.1	325.6	4.1	1.000257
5000.0	841.6	3.5	-7.6	43.4	1058.2	648.4	345.4	7.0	1.000253
5500.0	825.4	2.1	-7.9	47.5	1043.6	646.8	353.3	10.1	1.000249
6000.0	810.4	.7	-8.2	51.1	1029.3	645.2	356.5	13.4	1.000246
6500.0	795.2	-7	-8.7	54.7	1015.2	643.5	350.2	16.2	1.000242
7000.0	780.2	-1.9	-9.3	57.0	1000.5	642.1	345.7	19.1	1.000238
7500.0	765.4	-3.3	-9.4	62.7	986.6	640.4	338.6	20.8	1.000235
8000.0	750.8	-4.6	-10.9	61.5	972.6	638.0	332.7	22.9	1.000231
8500.0	736.3	-5.9	-10.4	70.4	958.5	637.3	325.0	23.9	1.000228
9000.0	722.1	-7.3	-10.0	80.7	944.7	635.7	317.8	25.2	1.000226
9500.0	708.1	-8.6	-9.8	80.9	931.0	634.1	311.2	26.2	1.000223
10000.0	694.4	-9.8	-10.2	97.4	917.3	632.7	305.0	26.9	1.000220
10500.0	680.4	-10.9	-11.1	98.4	903.1	631.3	299.9	27.8	1.000216
11000.0	667.4	-12.0	-12.1	98.9	889.1	630.0	297.8	28.3	1.000211
11500.0	654.1	-13.1	-13.3	98.5	875.2	628.0	295.9	28.9	1.000207
12000.0	641.1	-14.3	-14.5	98.2	861.6	627.2	296.9	29.7	1.000203
12500.0	628.3	-15.4	-15.6	97.9	848.3	625.8	297.7	30.5	1.000199
13000.0	615.8	-16.5	-16.8	97.6	835.1	624.4	298.6	30.1	1.000195
13500.0	603.6	-17.6	-18.0	97.2	822.2	623.0	295.2	29.7	1.000192
14000.0	591.5	-18.8	-19.4	94.9	809.4	621.0	292.6	29.5	1.000188
14500.0	579.5	-19.9	-21.6	86.2	796.6	620.2	289.8	29.5	1.000184
15000.0	567.8	-20.9	-23.6	78.8	783.8	618.4	285.8	30.6	1.000180
15500.0	556.1	-21.8	-24.7	77.3	770.3	617.8	282.0	31.8	1.000177
16000.0	544.7	-22.6	-25.7	75.9	757.0	616.8	276.7	33.6	1.000173
16500.0	533.6	-23.5	-26.7	74.4	744.0	615.8	272.0	35.6	1.000170
17000.0	522.6	-24.3	-27.7	73.0	731.3	614.7	269.7	37.3	1.000167
17500.0	511.8	-25.4	-28.0	71.6	719.4	613.3	267.9	39.0	1.000164
18000.0	501.2	-26.6	-30.3	70.2	707.8	611.9	266.9	40.6	1.000161
18500.0	490.7	-28.0	-31.8	69.6	697.1	610.1	267.0	41.8	1.000158
19000.0	480.4	-29.5	-33.3	69.1	686.6	608.2	267.0	43.1	1.000155
19500.0	470.2	-30.6	-33.7	73.8	675.1	606.8	267.5	44.0	1.000153
20000.0	460.3	-31.6	-33.9	79.9	663.5	605.6	268.0	44.8	1.000150
20500.0	450.4	-32.7	-35.1	78.8	652.5	604.1	269.8	45.4	1.000147
21000.0	440.8	-34.0	-37.0	73.8	641.9	602.6	273.0	46.1	1.000145
21500.0	431.3	-35.2	-39.0	67.5	631.3	601.1	277.7	48.0	1.000142
22000.0	422.1	-33.2	-43.3	35.3	612.8	603.5	283.4	47.7	1.000137
22500.0	413.1	-31.1	-45.2	23.1	594.4	606.2	289.9	45.9	1.000133
23000.0	404.4	-30.3	-47.8	16.0	579.9	607.2	295.8	43.2	1.000130

STATION ALTITUDE 3949.00 FT TSL  
14 FEB. 63 0830 HRS MSY  
ASCENSION NO. 77

UPPER AIR DATA  
0450020077  
WHITE SANDS  
APR 1963 cont'd

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
23500.0	395.8	-31.2	16.0	569.8	600.0	302.2	41.3	1.000127
24000.0	387.4	-31.9	16.0	559.4	605.1	307.7	40.9	1.000125
24500.0	379.1	-32.7	16.0	549.3	604.1	312.8	40.8	1.000123
25000.0	371.0	-32.4	16.0	536.8	604.5	313.9	40.9	1.000120
25500.0	363.1	-33.1	16.0	526.9	603.0	315.0	41.1	1.000118
26000.0	355.3	-34.0	16.0	517.5	602.5	312.9	39.6	1.000116
26500.0	347.6	-34.9	16.0	508.2	601.4	310.4	38.1	1.000114
27000.0	340.2	-35.7	16.0	499.1	600.3	307.0	35.2	1.000111
27500.0	332.8	-36.6	16.0	490.1	599.2	302.8	32.0	1.000109
28000.0	325.6	-37.0	16.0	480.3	598.7	295.2	33.8	1.000107
28500.0	318.5	-37.4	16.0	470.6	598.2	289.3	38.4	1.000105
29000.0	311.6	-38.5	16.0	458.7	599.3	287.9	41.7	1.000102
29500.0	304.9	-38.8	16.0	447.5	600.2	286.5	35.9	1.000100
30000.0	298.3	-39.2	16.0	434.8	602.3	280.4	33.9	1.000097
30500.0	291.9	-39.8	16.0	424.9	602.7	291.2	32.7	1.000095
31000.0	285.6	-39.9	16.0	415.9	602.0	293.5	30.5	1.000093
31500.0	279.5	-39.7	16.0	408.2	601.6	296.0	28.2	1.000091
32000.0	273.4	-39.6	16.0	400.9	600.5	296.8	26.1	1.000090
32500.0	267.5	-39.5	16.0	393.7	599.3	293.0	24.5	1.000088
33000.0	261.7	-39.4	16.0	386.7	598.2	288.7	23.0	1.000086
33500.0	256.0	-39.3	16.0	379.8	597.0	283.5	23.0	1.000085
34000.0	250.5	-39.2	16.0	373.0	595.9	278.3	24.2	1.000083
34500.0	245.0	-40.1	16.0	366.2	594.7	274.5	26.3	1.000082
35000.0	239.6	-40.2	16.0	358.4	594.5	275.9	32.1	1.000080
35500.0	234.3	-40.3	16.0	350.6	594.4	276.7	37.9	1.000078
36000.0	229.1	-41.1	16.0	344.0	593.5	276.3	42.2	1.000077
36500.0	224.1	-41.9	16.0	337.5	592.5	275.8	45.2	1.000075
37000.0	219.1	-41.2	16.0	329.1	593.3	274.8	41.7	1.000073
37500.0	214.3	-41.7	16.0	322.5	592.7	274.2	39.1	1.000072
38000.0	209.5	-42.1	16.0	315.9	592.1	274.5	37.9	1.000070
38500.0	204.9	-42.6	16.0	309.5	591.5	274.5	37.5	1.000069
39000.0	200.3	-43.1	16.0	303.3	590.9	274.4	37.3	1.000068
39500.0	195.4	-42.0	16.0	295.2	592.3	275.8	40.1	1.000066
40000.0	191.5	-41.3	16.0	287.8	593.2	277.3	43.5	1.000064
40500.0	187.3	-41.7	16.0	281.9	592.0	278.4	47.0	1.000063
41000.0	183.1	-42.2	16.0	276.2	592.1	279.4	50.5	1.000062
41500.0	179.1	-42.6	16.0	270.5	591.6	277.6	45.7	1.000060
42000.0	175.1	-43.0	16.0	265.0	591.1	275.0	40.3	1.000059
42500.0	171.2	-43.4	16.0	259.6	590.5	272.3	37.6	1.000058
43000.0	167.3	-44.2	16.0	254.7	589.4	269.8	36.7	1.000057

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

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GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

UPPER AIR DATA  
0450020077  
WHITE SANDS  
TABLE-13 CONT.

STATION ALTITUDE 3989.00 F ET MSL  
14 FEB. 53  
0830 HRS MST  
ASCENSION NO. 11

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
43500.0	163.6	-45.1		249.9	508.3	268.4	37.0	1.000056
44000.0	159.9	-46.0		245.2	587.1	269.6	40.2	1.000055
44500.0	156.3	-46.9		240.6	586.0	270.6	43.5	1.000054
45000.0	152.8	-47.8		236.1	584.8	272.8	41.5	1.000053
45500.0	149.3	-48.5		231.6	583.9	275.3	39.2	1.000052
46000.0	145.9	-48.7		226.4	583.7	276.5	37.3	1.000050
46500.0	142.5	-49.4		221.9	582.7	276.6	35.6	1.000049
47000.0	139.2	-50.4		217.7	581.4	276.1	35.8	1.000048
47500.0	135.9	-51.4		213.6	580.1	275.3	37.1	1.000048
48000.0	132.8	-52.4		209.5	578.8	277.4	38.1	1.000047
48500.0	129.6	-53.5		205.6	577.4	280.9	39.0	1.000046
49000.0	126.6	-54.5		201.7	576.1	282.9	39.7	1.000045
49500.0	123.7	-55.5		197.9	574.8	283.6	40.2	1.000044
50000.0	120.8	-56.5		194.2	573.4	284.1	40.5	1.000043
50500.0	117.9	-57.5		190.5	572.1	286.6	38.0	1.000042
51000.0	115.2	-58.5		186.9	570.8	276.7	35.7	1.000042
51500.0	112.5	-59.5		183.4	569.4	271.5	33.1	1.000041
52000.0	109.8	-60.5		179.9	568.1	264.8	30.6	1.000040
52500.0	107.2	-61.4		176.3	566.9	257.5	27.6	1.000039
53000.0	104.6	-62.3		172.8	565.7	248.9	24.2	1.000038
53500.0	102.0	-63.2		169.3	564.5	240.0	20.7	1.000038
54000.0	99.6	-64.4		164.6	563.5	230.5	16.4	1.000037
54500.0	97.2	-61.7		160.1	562.5	221.0	13.1	1.000036
55000.0	94.8	-62.5		156.7	561.4	217.3	10.5	1.000035
55500.0	92.5	-63.3		153.5	560.4	211.0	8.0	1.000034
56000.0	90.2	-64.1		150.3	559.3	222.7	6.4	1.000033
56500.0	88.0	-64.8		147.2	562.3	243.2	6.1	1.000033
57000.0	85.8	-65.6		144.1	561.2	271.0	7.1	1.000032
57500.0	83.7	-66.4		141.1	560.2	274.1	11.0	1.000031
58000.0	81.7	-66.7		137.8	559.0	274.8	15.1	1.000031
58500.0	79.7	-66.4		134.2	560.2	272.5	18.6	1.000030
59000.0	77.7	-66.6		131.0	559.9	259.8	20.0	1.000029
59500.0	75.8	-67.8		128.5	558.3	249.2	22.3	1.000029
60000.0	73.9	-68.2		125.6	557.7	243.1	24.3	1.000028
60500.0	72.0	-68.2		122.4	557.0	239.4	26.0	1.000027
61000.0	70.3	-63.4		116.7	564.2	236.6	27.6	1.000026
61500.0	68.6	-61.7		113.0	566.5	242.7	26.0	1.000025
62000.0	66.9	-60.5		109.6	568.2	249.5	24.7	1.000024
62500.0	65.3	-59.2		106.4	569.8	259.2	21.6	1.000024
63000.0	63.8	-58.0		103.3	571.4	278.3	16.8	1.000023

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

UPPER AIR DATA  
0450020077  
WHITE SANDS  
TABLE-77 cont'd

STATION ALTITUDE 3989.00 FT, T MSL  
14 FEB. 83 0830 HRS MST  
ASCENSION NO. 77

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION (TN) SPEED KNOTS	INDEX OF REFRACTION
63500.0	62.2	-58.0		100.8	571.5	306.5	1.000022
64000.0	60.7	-58.8		98.7	570.3	332.7	1.000022
64500.0	59.3	-59.7		96.7	569.2	355.7	1.000022
65000.0	57.8	-60.5		94.8	568.1	12.1	1.000021
65500.0	56.4	-61.4		92.8	566.9	30.5	1.000021
66000.0	55.1	-62.2		91.0	565.8	45.7	1.000020
66500.0	53.7	-63.1		89.1	564.6	49.1	1.000019
67000.0	52.5	-63.9		87.3	563.5	53.6	1.000019
67500.0	51.2	-64.8		85.6	562.4	40.7	1.000019
68000.0	50.0	-65.6		83.8	561.3	20.3	1.000018
68500.0	48.7	-64.7		81.4	562.5	10.8	1.000018
69000.0	47.5	-63.8		79.1	563.6	21.1	1.000017
69500.0	46.4	-63.0		76.9	564.8	31.1	1.000017
70000.0	45.3	-62.1		74.7	566.0	48.2	1.000016
70500.0	44.2	-61.5		72.7	566.8	78.4	1.000016
71000.0	43.1	-61.4		70.9	566.9	112.2	1.000016
71500.0	42.1	-61.3		69.2	567.1	138.8	1.000015
72000.0	41.1	-61.2		67.5	567.2	153.6	1.000015
72500.0	40.1	-61.1		65.8	567.3	164.2	1.000015
73000.0	39.1	-61.0		64.2	567.5	182.9	1.000014
73500.0	38.2	-60.8		62.6	567.7	215.4	1.000014
74000.0	37.3	-60.2		60.9	568.6	225.6	1.000014
74500.0	36.4	-59.5		59.3	569.4	238.3	1.000013
75000.0	35.5	-58.9		57.7	570.3	248.3	1.000013
75500.0	34.7	-58.2		56.2	571.1	61.3	1.000013
76000.0	33.8	-57.6		54.7	572.0	64.2	1.000012
76500.0	33.0	-56.4		53.2	572.9	61.9	1.000012
77000.0	32.2	-56.6		51.9	573.3	58.4	1.000012
77500.0	31.5	-56.8		50.7	573.0	55.7	1.000011
78000.0	30.7	-57.1		49.6	572.7	58.4	1.000011
78500.0	30.0	-57.3		48.4	572.4	63.0	1.000011
79000.0	29.3	-57.1		47.3	572.0	68.6	1.000011
79500.0	28.6	-56.9		46.1	572.0	63.7	1.000010
80000.0	27.9	-56.8		45.0	573.1	58.8	1.000010
80500.0	27.3	-56.6		43.9	573.3	54.1	1.000010
81000.0	26.6	-56.4		42.8	573.6	49.0	1.000010
81500.0	26.0	-56.2		41.8	573.9	43.7	1.000009
82000.0	25.4	-55.9		40.7	574.3	40.3	1.000009
82500.0	24.8	-55.6		39.7	574.6	40.6	1.000009
83000.0	24.2	-55.3		38.8	575.0	40.9	1.000009

UPPER AIR DATA  
0450020077  
WHITE SANDS  
TABLE-13 CONT'D

STATION ALTITUDE 3989.00 FT T-5L  
14 FEB 63 0830 HRS MST  
ASCENSION NO. 77

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

GEOMETRIC ALTITUDE, MSL FEET	PRESSURE MILLIBARS	TEMPERATURE, AIR DEGREES, CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	DIRECTION, DEGREES (TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
83500.0	23.7	-55.0		37.8	575.4	49.5	7.7	1.000008
84000.0	23.1	-54.7		36.9	575.8	66.3	7.7	1.000008
84500.0	22.6	-54.4		36.0	576.2	81.8	8.3	1.000008
85000.0	22.1	-54.1		35.1	576.6	93.7	9.0	1.000008
85500.0	21.5	-53.8		34.2	577.0	103.5	9.8	1.000008
86000.0	21.0	-53.5		33.4	577.3	111.7	10.8	1.000007
86500.0	20.5	-53.2		32.5	577.7	112.7	8.2	1.000007
87000.0	20.1	-52.9		31.7	578.1	112.2	4.9	1.000007
87500.0	19.6	-52.5		31.0	578.7	109.5	1.6	1.000007
88000.0	19.2	-52.0		30.2	579.4	304.5	1.0	1.000007
88500.0	18.7	-51.5		29.4	580.0	298.6	3.3	1.000007
89000.0	18.3	-51.0		28.7	580.6	297.5	5.7	1.000006
89500.0	17.9	-50.5		28.0	581.3	296.4	6.7	1.000006
90000.0	17.5	-50.0		27.3	581.9	294.4	6.2	1.000006
90500.0	17.1	-49.6		26.6	582.5	292.1	5.8	1.000006
91000.0	16.7	-49.1		25.9	583.2	290.7	5.4	1.000006
91500.0	16.3	-48.6		25.3	583.8	294.0	5.4	1.000006
92000.0	15.9	-48.1		24.7	584.4	297.4	5.3	1.000005
92500.0	15.6	-47.6		24.1	585.1	300.9	5.3	1.000005
93000.0	15.2	-47.1		23.5	585.7	301.7	6.1	1.000005
93500.0	14.9	-46.6		22.9	586.3	302.1	7.1	1.000005
94000.0	14.5	-46.1		22.3	587.0	302.5	8.0	1.000005
94500.0	14.2	-45.7		21.8	587.6	303.6	8.2	1.000005
95000.0	13.9	-45.5		21.2	587.8	303.2	7.9	1.000005
95500.0	13.6	-45.4		20.8	587.9	307.0	7.7	1.000005
96000.0	13.3	-45.4		20.3	587.9	302.7	8.0	1.000005
96500.0	13.0	-45.4		19.8	588.0	289.1	10.0	1.000004
97000.0	12.7	-45.3		19.4	588.0	280.4	12.4	1.000004
97500.0	12.4	-45.3		19.0	588.1	274.6	15.0	1.000004
98000.0	12.1	-45.3		18.5	588.1			1.000004
98500.0	11.9	-45.2		18.1	588.1			1.000004
99000.0	11.6	-45.2		17.7	588.2			1.000004
99500.0	11.3	-45.2		17.3	588.2			1.000004
100000.0	11.1	-45.1		16.9	588.3			1.000004

STATION ALTITUDE 3989.00 FEET SL  
 14 FEB. 43 0830 HRS MST  
 ASCENSION NO. 77

MANDATORY LEVELS  
 0450020077  
 WHITE SANDS  
 TABLE-10

GEODETIC COORDINATES  
 32.40043 LAT DEG  
 106.37033 LON DEG

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM.		WIND DATA	
MILLIBARS	FEET	AIR DEGREES	DEWPOINT CENTIGRADE	PERCENT		DIRECTION DEGREES (TN)	SPEED KNOTS
850.0	4733.	4.2	-7.5	42.		337.4	5.4
800.0	6338.	-4.3	-8.5	54.		352.0	15.3
750.0	8019.	-4.7	-11.0	61.		332.4	23.0
700.0	9786.	-9.4	-9.8	97.		307.6	26.5
650.0	11653.	-13.5	-13.7	98.		290.3	29.1
600.0	13635.	-18.0	-18.3	97.		294.4	29.6
550.0	15751.	-22.2	-23.2	77.		279.2	32.7
500.0	18031.	-26.7	-30.5	70.		266.9	40.7
450.0	20494.	-32.8	-35.2	79.		269.8	45.4
400.0	23216.	-30.8	-48.3	16.		299.0	42.1
350.0	26303.	-34.6	-51.4	16.		311.2	38.6
300.0	29812.	-34.4	-51.3	16.		287.6	34.2
250.0	33970.	-39.3	-55.4	16.		278.1	24.3
200.0	38942.	-43.1				274.3	37.3
175.0	41907.	-43.0				275.0	40.4
150.0	45279.	-48.5				274.6	39.8
125.0	49167.	-55.0				263.3	40.0
100.0	53746.	-62.6				233.1	17.3
80.0	58224.	-66.4				275.1	18.3
70.0	60869.	-62.7				237.2	27.5
60.0	64034.	-59.3				344.2	15.2
50.0	67726.	-65.6				22.7	9.0
40.0	72204.	-61.1				154.0	10.7
30.0	78177.	-57.3				62.7	10.9
25.0	81971.	-55.7				40.4	9.0
20.0	86665.	-52.0				112.1	4.7
15.0	92838.	-46.8				301.9	0.6